

CHAPTER XI:

LOW-IMPACT DESIGNS FOR ENVIRONMENTALLY SENSITIVE AREAS

The following designs do not fit exactly in the previous chapters, however they are important models to consider when working with access sites located in environmentally sensitive areas. Although developing a launch site in these areas is strongly discouraged, there may be situations where no alternative access points are available.

ELEVATED WALKWAYS

A. General Description

Elevated walkways are raised structures that allow paddlers to access launching areas without having direct contact with the ground. They are effective in minimizing potential impacts from recreational use on riparian habitats, fragile shorelines, or other sensitive environmental areas. While providing a stable surface, elevated walkways can prevent erosion, protect existing vegetation, and be used to promote revegetation of damaged areas. Many of these structures are light-penetrating walkways, which allow vegetation beneath them to receive the sunlight necessary for growth.

B. Materials

Typically constructed from expanded metal, aluminum, fiberglass, or wood, elevated walkways allow plants to grow through their grated surfaces. They are most effective when used with tripods or other above-ground supports. These can include posts that are driven into the bank, however posts should not be installed too close to the edge of the bank as this may contribute to erosion. If a ladder is used, it should have minimal contact with the bank or shoreline vegetation at all water levels. Shorter walkways are preferable so that wildlife may access water easily.

C. Design specifications/variations

Elevated walkways can be used in a variety of ways. They may be combined with other walkways or connecting structures to provide access to floating or other types of launches; they may be attached to stairs or ladders that lead to launch structures or rest on the bottom of a river or lake; or they can be cantilevered over a river while supported by a tripod. Manufacturers offer materials that meet ADA accessibility standards.

More information on elevated walkways is available online on Alaska Fish and Game's website at: <http://www.sf.adfg.state.ak.us/sarr/restoration/techniques/walkways.cfm>

GEOTEXTILE MATS AND BLOCKS

A. General Description

Geotextile mats or blocks are light-weight, plastic mats composed of open cells that allow water to pass through to vegetation below. Since they enable access in environmentally sensitive areas without significantly disrupting riparian habitats or vegetation, they are often used near lakes or reservoirs or to access the water from marshy areas.

B. Materials

Commercial products such as the Geoblock porous pavement system offer a flexible support system that can support heavy weight while protecting vegetation. Composed of recycled polyethylene, individual Geoblock mats typically measure 20" x 40" x 2" and fasten together with ¾" screws. Interlocking mats are stabilized by topsoil or vegetative material spread into the cells. Grass can be also used at sites that see low to moderate use. Rip-rap or fist-sized gravel can provide a smooth surface for walking and also serve as reliable anchors.

C. Design specifications/variations

- Proper anchoring of mats and blocks is essential, as erosion can cause them to separate and scatter in the water, potentially becoming dangerous strainers in the water downstream.
- In areas that become submerged, gravel can be added into cells in order to add weight and anchor them in place. See website at <http://www.prestogeo.com> for more detailed specifications.

D. Advantages

- Are light-weight
- Are made of recycled polyethylene
- Allow light to penetrate (40% open area per panel)
- Will not leach chemicals into water or surrounding riparian area
- Will not rot
- Have tread width of 20"

E. Disadvantages

- Can be more expensive than other materials
- Require the use of special tools
- May take longer to install than other materials
- Can create potentially dangerous strainers, down river or elsewhere on a water body, if erosion causes blocks to separate and scatter in the water

F. Case Examples, designs, photos

1) Deal Island Wildlife Management Area, St. Peters Creek, Somerset County, Maryland

Constructed as part of a traditional boat launch for motorized boats, this “soft” launch was built using Geoweb cellular confinement material filled with pea gravel. The launch serves a dual purpose of providing separate access to paddlers and stabilizing the shoreline from erosion.

Specifications

- *Dimensions:* Geocell is 8' wide x 16' long x 6" thick
- *Anchor:* Geocell is filled with #67 pea gravel, naturally rounded with no sharp edges; placed on a 4" thick compacted layer of CR-6
- *Slope:* 1:8, from an elevation of +1.5' down to an elevation of -.5'



Photo 11A: Geocell material provides paddlers with a “soft” launching alternative to a traditional boat launch

Photos 11B: Geocell material anchored with pea gravel offers low-impact access while helping to stabilize an eroding bank



Photos courtesy of Maryland Department of Natural Resources

2) Historic canoe launch, Fort Clatsop National Memorial
Lewis and Clark River, near Astoria, Oregon

The historic canoe launch at Fort Clatsop National Memorial, along the Lewis and Clark River, is an example of a site located in an environmentally sensitive area that cannot be moved, given its role in the historic and cultural landscape. Fort Clatsop was the site from which Lewis and Clark launched on their return journey east in 1804. Moving the launch would alter the site's historic accuracy, as well as the vistas important to the character and experience of the site.

Although the launch is used primarily for display purposes and is not open for public use, the environmental challenges posed at this site resemble those at many public launch areas.

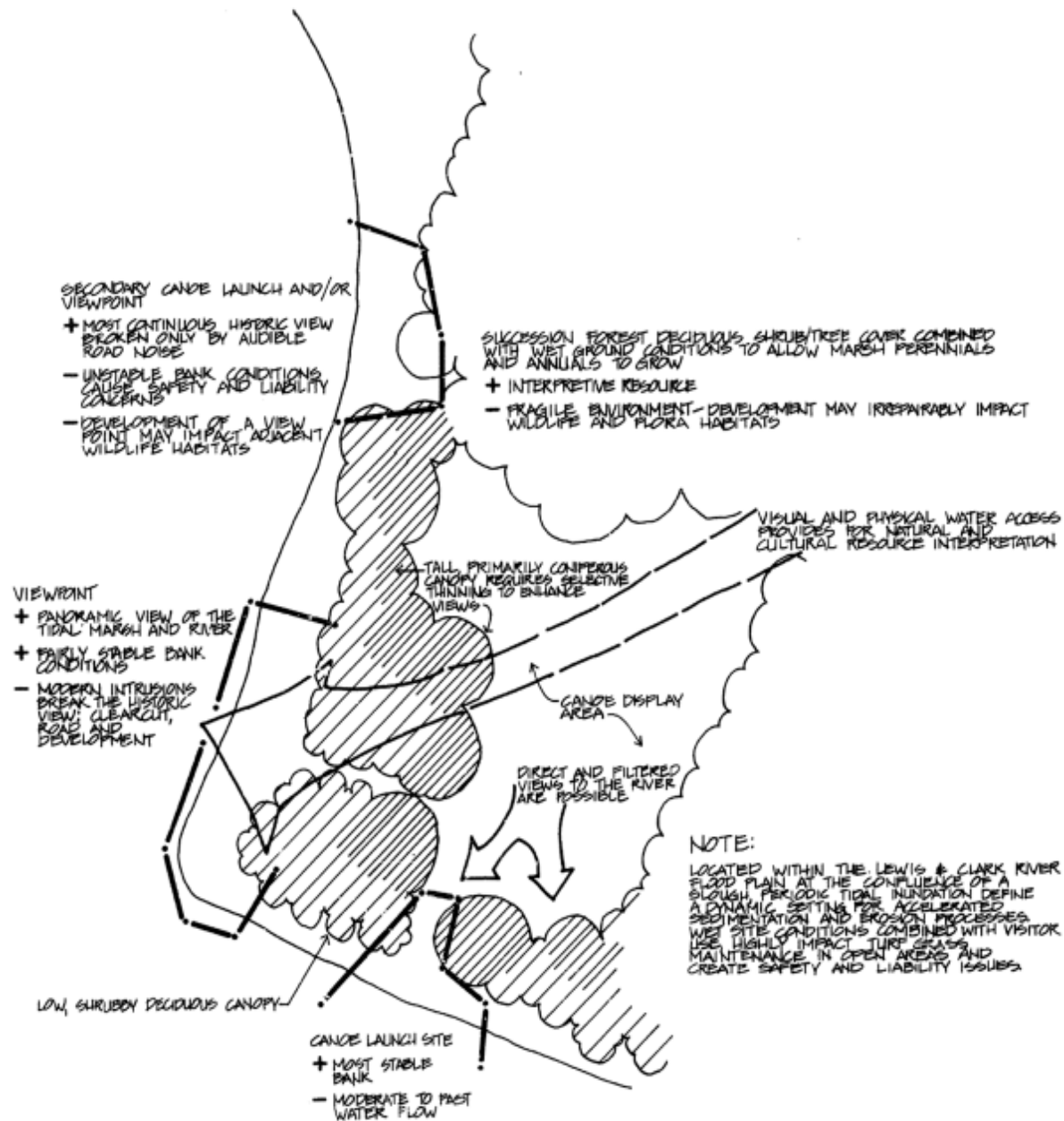
Problem: Situated on an exposed area of a tidal river, the main challenges to the longevity of the launch are impacts of erosion, wind, and heavy flows. Additionally, due to its location on a bend of the river, the landing is vulnerable to lateral flows caused by the dramatic changes in direction and curvature on this part of the meander.

Solution: Through detailed site analyses, assessments were made of the site that accounted for current and future trends in channel morphology and behavior, as well as the effects of sedimentation and erosion patterns. Due to the vulnerability of the canoe landing's location and exposure to strong winds and currents, it was determined that this site needed "erosive resistant features," such as a vegetation buffer, to offer protection and stabilization to the landing.

A beach area on the south side of the landing has been designated as a public launch site that will be open as of June 2004. The site may be not used at all times, however, due to the tides. Paddlers may launch at high tide only, as the area becomes too muddy for launching at low tide. Paddlers will need to carry their boats to the beach site while walking on a concrete path from a parking area located just north of the site.

DIAGRAM 11A: Site evaluation of Fort Clatsop, showing both development opportunities and constraints, Fort Clatsop National Memorial

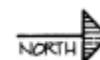
Design provided by NPS, Denver Service Center



SITE EVALUATION

LEGEND

- + DEVELOPMENT OPPORTUNITIES
- DEVELOPMENT CONSTRAINTS



SCALE 1"=20'-0"

DIAGRAM 11B: Site analysis of river morphology, shore configuration and sedimentation/erosion patterns, Fort Clatsop National Memorial

Design provided by NPS, Denver Service Center

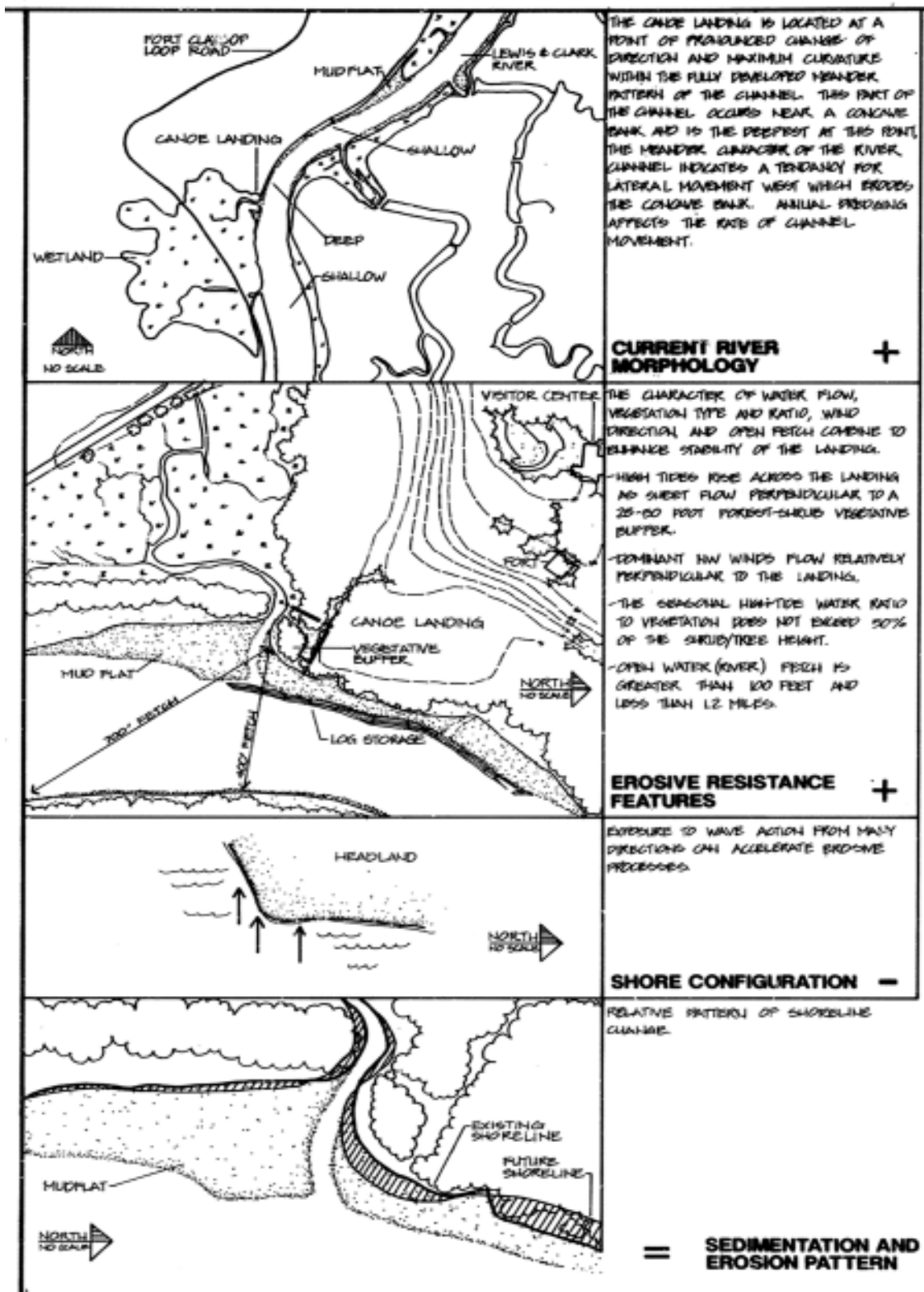
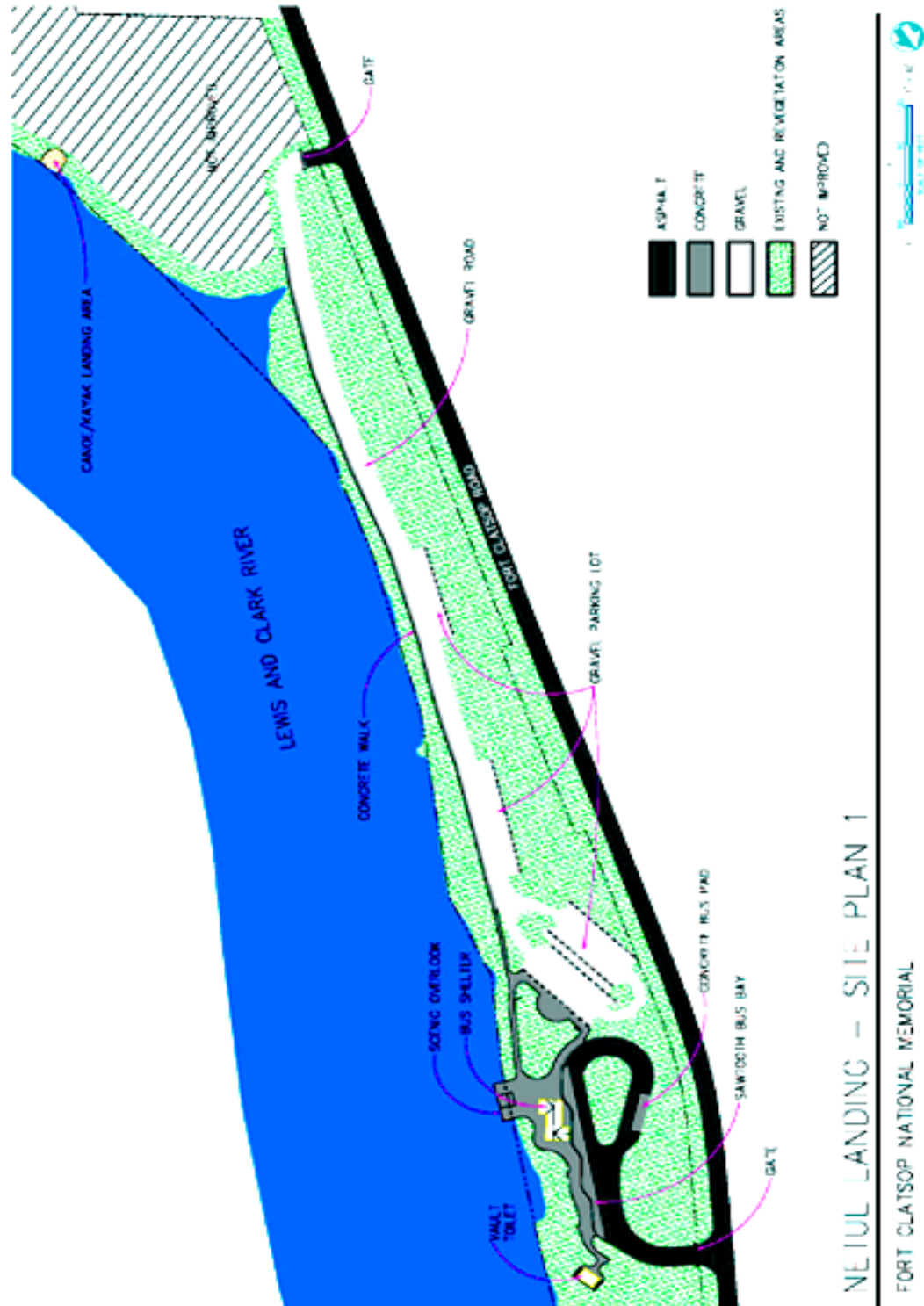


DIAGRAM 11C: Site plan for Netul Landing, new public launch at Fort Clatsop

Design provided by Jill Harding, Fort Clatsop National Monument



NOTES
